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Practitioner's Docket No.TRW(TE)5006 ***PATENT***

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: David L. Juzswik

Application No.: 09/687,709 Group No.: 2636

Filed: October 13, 2000 Examiner: Daniel Previl

For: **VEHICLE-CONTROLLED TIRE CONDITION SENSOR COMMUNICATION UTILIZING FIXED TIRE IDENTIFICATION**

Mail Stop Appeal Brief--Patents
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TRANSMITTAL OF APPEAL BRIEF
(PATENT APPLICATION—37C.F.R. 1.192)

Note: The phrase "the date on which" an "appeal was taken" in 35 U.S.C. 154(b)(1)(A)(ii) (Which provides an adjustment of patent term if there is a delay on the part of the Office to respond within 4 months after an "appeal was taken") means the date on which an appeal brief under § 1.192 (and not a notice of appeal) was filed. Compliance with § 1.192 requires that: 1. the appeal brief fee (§ 1.17(c)) be paid (§ 1.192(a)); and 2. the appeal brief complies with § 1.192(c)(1) through (c)(9). See Notice of September 18, 2000, 65 Fed. Reg. 56366, 56385-56387 (Comment 38).

1. Transmitted herewith is the APPEAL BRIEF in this application, with respect to the Notice of Appeal filed on **May 2, 2005**.

NOTE: "Appellant must, file a brief under this section within two months from the date of filing the notice of appeal under § 41.31.37 CFR 41.(a)(1). The breif is no longer required in triplicate. The former alternative time for filing a brief (within the time allowed for reply to the action from which the appeal was taken) has been removed. Appellant must file within two months from the notice of appeal. See Notice of August 12, 2004, 69 FR 49960, 49962.

CERTIFICATION UNDER 37 CFR §§ 1.8(a) and 1.10*

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I hereby certify that, on the date shown below, this correspondence is being:

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Anita J. Galo
Signature

Date: July 29, 2005

Anita J. Galo
(type or print name of person certifying)

**Only the date of filing (§ 1.6) will be the date used in a patent term adjustment calculation, although the date on any certificate of mailing or transmission under § 1.8 continues to be taken into account in determining timeliness. See § 1.703(f). Consider "Express Mail Post Office Addressee" (§ 1.10) or facsimile transmission (§ 1.6(d)) for the reply to be accorded the earliest possible filing date for patent term adjustment calculations.*

2. STATUS OF APPLICANT

This application is on behalf of

☒ other than a small entity.

☐ a small entity.

A statement

☐ is attached.

☐ was already filed.

3. FEE FOR FILING APPEAL BRIEF

Pursuant to 37 § 41.20(b)(2), the fee for filing the Appeal Brief is:

☐	small entity	$250.00
☒	other than a small entity	$500.00

Appeal Brief fee due $500.00

4. EXTENSION OF TERM

NOTE: 37 C.F.R. § 1.740(b) "...an applicant shall be deemed to have failed to engage in reasonable efforts to conclude processing or examination of an application for the cumulative total of any periods of time in excess of three months that are taken to reply to any notice or action by the Office making any rejection, objection, argument, or other request, measuring such three-month period from the date the notice or action was mailed or given to the applicant, in which case the period of adjustment set forth in § 1.703 shall be reduced by the number of days, if any, beginning on the date after the date that is three months after the date of mailing or transmission of the Office communication notifying the applicant of the rejection, objection, argument, or other request and ending on the date the reply was filed. The period, or shortened statutory period, for reply that is set in the Office action or notice has not effect on the three-month period set forth in this paragraph."

NOTE: The time periods set forth in 37 C.F.R. § 1.192(a) are subject to the provision of § 1.136 for patent applications. 37 C.F.R. § 1.191(d). See also Notice of November 5, 1985 (1060 O.G. 27).

NOTE: As the two-month period set in § 1.192(a) for filing an appeal brief is not subject to the six-month maximum period specified in 35 U.S.C. § 133, the period for filing an appeal brief may be extended up to seven months. 62 Fed. Reg. 53,131 at 53,156; 1203 O.G. 63 at 84 (Oct. 10, 1997).

The proceedings herein are for a patent application and the provisions of 37 C.F.R. 1.136 apply.

(complete (a) or (b), as applicable)

(a) ☒ Applicant petitions for an extension of time under 37 C.F.R. § 1.136 (fees: 37 C.F.R. 1.17(a)(1)-(5)) for the total number of months check below:

	Extension (months)	Fee for other than small entity	Fee for small entity
☒	one month	$ 120.00	$ 60.00
☐	two months	$ 450.00	$ 225.00
☐	three months	$1,020.00	$ 510.00
☐	four months	$1,590.00	$ 985.00
☐	five months	$2,160.00	$1,080.00

Fee $120.00

If an additional extension of time is required, please consider this a petition therefor.

(check and complete the next time, if applicable)

☐ An extension for _____ months has already been secured and the fee paid therefor of $_____ is deducted from the total fee due for the total months of extension now requested.

Extension fee due with this request $= 120.00

or

(b) ☐ Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition for extension of time.

5. TOTAL FEE DUE

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The total fee due is:

Appeal brief fee $500.00

Extension fee (if any) $120.00

TOTAL FEE DUE $620.00

6. FEE PAYMENT

☒ Attached is a ☒ check ☐ money order in the amount of $620.00

☒ Authorization is hereby made to charge the amount of $0.00

☒ to Deposit Account No. 20-0090.

☐ to Credit card as shown on the attached credit card information authorization form PTO-2038.

WARNING: *Credit card information should **not** be included on this form as it may become public.*

☒ Charge any additional fees required by this paper or credit any overpayment in the manner authorized above.

A duplicate of this paper is attached.

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NOTE: If there is a fee deficiency and there is no authorization to charge an account, additional fees are necessary to cover the additional time consumed in making up the original deficiency. If the maximum, six-month period has expired before the deficiency is noted and corrected, the application is held abandoned. In those instances where authorization to charge is included, processing delays are encountered in returning the papers to the PTO Finance Branch in order to apply these charges prior to action on the cases. Authorization to change the deposit account for any fee deficiency should be checked. See the Notice of April 7, 1986 (1065 O.G. 31-33).

☒ If any additional extension and/or fee is required,

AND/OR

☒ If any additional fee for claims is required, charge:

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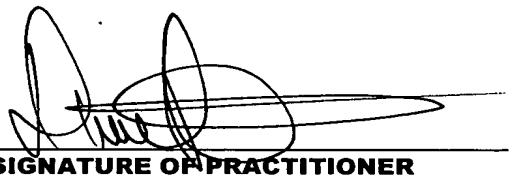

SIGNATURE OF PRACTITIONER

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PATENT

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July 29, 2005

Anita J Kalo 7/29/2005

SIGNATURE DATE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	David L. Juzswik
Serial No.	:	09/687,709
Filed	:	October 13, 2000
For	:	VEHICLE-CONTROLLED TIRE CONDITION SENSOR COMMUNICATION UTILIZING FIXED TIRE IDENTIFICATION
Group Art Unit	:	2636
Examiner	:	Daniel Previl
Attorney Docket No.	:	TRW(TE)5006

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Commissioner for Patents
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Alexandria, VA 22313-1450

APPEAL BRIEF

Sir:

Pursuant to the Notice of Appeal filed on May 2, 2005, Appellant presents this Appeal Brief.

I. REAL PARTY IN INTEREST

The real party in interest is TRW Automotive U.S. LLC. An assignment of this application to TRW, Inc. was recorded October 13, 2000, Reel/Frame: 011253/0428. This application has been subsequently assigned to TRW Automotive U.S. LLC via an unrecorded assignment.

II. RELATED APPEAL AND INTERFERENCES

There are no related appeals or interferences.

III. STATUS OF CLAIMS

Claims 15-30, 32-40, 42-54, and 57-64 are currently pending in this application. Claims 1-14, 31, 41, 55, and 56 have been cancelled. Claims 45 and 46 are objected to as having two dependencies. Claims 43-54 stand rejected as being obvious under 35 U.S.C. §103 over Naito et al., U.S. Patent No. 5,557,552, in view of McClelland et al., U.S. Patent No. 6,710,708. Claims 15-30, 32-40, 42, and 57-67 are allowed.

The rejection of claims 43-54 is appealed.

IV. STATUS OF AMENDMENTS

No amendments to the claims have been filed after the Final Office Action of December 2, 2004.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The present invention relates to a tire communication system 10 of a vehicle 12 and a method of communicating tire condition information from a tire condition sensor unit 18A to a vehicle-based unit 28 of the tire communication system. (Page 3. line 11-page 7, line 11). The tire communication system 10

includes a plurality of tire condition sensor units 18A-18D for sensing one or more tire conditions of vehicle tires 14A-14D. (Page 8, lines 17-22). The tire communication system 10 also includes the vehicle-based unit 28, which receives tire condition information in radio frequency signals 24A-24D transmitted by the tire condition sensor units 18A-18D. The vehicle-based unit 28 also controls associated antennae 40A-40D for transmitting initiation signals 44A-44D to the tire condition sensor units 18A-18D. (Page 11, lines 6-10). Preferably, each initiation signal 44A-44D is a low frequency signal. (Page 11, lines 21-23). Each of the tire condition sensor units 18A-18D is responsive to receipt of an initiation signal 44A-44D for outputting a radio frequency signal 24A-24D that includes the sensed tire condition(s). (Page 14, lines 4-13).

According to one embodiment of the invention, a controller 76 of the vehicle-based unit 28 receives a vehicle speed signal. (Fig. 3; and Page 20, lines 17-19). The vehicle speed signal is provided to the controller 76 of the vehicle-based unit 28 from a sensor, such as a transmission sensor. (Page 20, lines 16-19). The vehicle-based unit 28, when receiving a vehicle speed signal, may vary the rate of initiating communication, i.e., the rate of transmitting initiation signals 44A-44D, with the tire condition sensor units 18A-18D. (Page 20, lines 20-23).

The radio frequency signals 24A-24D transmitted by the tire condition sensor units 18A-18D convey the sensed tire condition(s) along with a fixed tire identification. (Page 9, lines 13-18). The fixed tire identification for each of the tire condition sensor unit 18A-18D is stored in a memory 86 of the vehicle-based unit 28.

(Page 19, lines 13-18). The controller 76 of the vehicle-based unit 28 compares the identification received in each radio frequency signal 24A-24D to the fixed tire identifications stored in the memory 86 to determine if the received radio frequency signal is a valid signal for the tire communication system 10. (Page 19, lines 13-23). When the identification received in each radio frequency signal 24A-24D is a valid identification, the controller 76 further processes the information conveyed in the radio frequency signal 24A-24D and proves a control signal to an indicator 38 for providing the vehicle operator with tire condition information. (Page 10, lines 8-15; and Page 19, lines 18-23). The memory 86 of the vehicle-based unit 28 may be updated with a new identification from a new tire condition sensor unit, for example, when a new tire including the new tire condition sensor unit is mounted on the vehicle 12. (Page 25, line 12-page 26, line 20).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether the objection to claims 45 and 46 is proper?

2. Whether claims 43-54 are obvious over Naito et al. in view of McClelland et al.?

Grouping of claims:

a. Claims 43-45, 47, and 48 stand or fall together.

b. Claim 46 stands or falls alone.

c. Claims 49-53 stand or fall together.

d. Claim 54 stands or falls alone.

The claims of groups a-d stand or fall independently from one another.

VII. ARGUMENTS

A. The objection of claims 45 and 46

Claims 45 and 46 have been objected to as having two dependencies. The Office action states that claims 45 and 46 are dependent on both claims 43 and 44. It is respectfully submitted that claims 45 and 46, as set forth in the Listing of Claims of the Amendment dated July 12, 2004 depend only from claim 43 and do not depend from claim 44. A close inspection of claims 45 and 46 of the Amendment dated July 12, 2004 shows that the dependency of claim 44 has been deleted from claims 45 and 46 when the dependency of claim 43 was added. A strikethrough, similar to the strikethrough used throughout the July 12, 2004 amendment, extends through the number "44" in claims 45 and 46. Thus, claims 45 and 46 depend only from claim 43. Therefore, withdrawal of the objection of claims 45 and 46 is respectfully requested.

B. The rejection of Claim 43

Claim 43 stands rejected as being obvious under 35 U.S.C. §103 over Naito et al. in view of McClelland et al. It is respectfully submitted that the rejection of claim 43 is improper and should be withdrawn.

The M.P.E.P. sets forth the criteria for a rejection for obviousness as follows:

> To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the

> reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure.

See, M.P.E.P. § 706.02(j) *citing* In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Claim 43 recites a method of communicating tire condition information from a tire condition sensor unit to a vehicle-based unit of a tire communication system of a vehicle. The method of claim 43 recites the steps of: sensing a condition of the vehicle; outputting from the vehicle based-unit, at a rate that varies in response to the sensed condition of the vehicle, low frequency initiation signals for reception by the tire condition sensor unit; and outputting, in response to receipt of a low frequency initiation signal, a radio frequency response signal that conveys the tire condition information from the tire condition sensor unit for reception by the vehicle-based unit. It is respectfully submitted that claim 43 patentably defines over a combination of Naito et al. and McClelland et al. for at least the following reasons:

1. **A Combination of Naito et al. and McClelland et al. fails to teach all of the claim limitations of claim 43.**

It is respectfully submitted that neither Naito et al. nor McClelland et al. teaches or suggests the step of outputting from the vehicle based-unit, at a rate that varies in response to the sensed condition of the vehicle, low frequency initiation signals for reception by the tire condition sensor unit. In rejecting claim 43, the Office Action of December 2, 2004 states that Naito et al. teaches "at a rate that varies in response to the sensed condition of the vehicle (variation range is provided based on the vehicle speed) (col. 8, lines 42-59)." (Office Action, page 2). The

variation referred to in Naito et al., however, is not a rate of outputting low frequency initiation signal from the vehicle-based unit, as claim 43 recites.

The tire condition monitoring system of Naito et al. determines whether the inflation pressure of a tire has dropped below an allowable lower limit by comparing a corrected dynamic loaded tire radius r_{RF} to values stored in a lookup table. (Naito et al., Col. 9, lines 29-34). The corrected dynamic loaded tire radius r_{RF} is determined from a calculated absolute vehicle speed V_{AB} and a dynamic loaded tire radius r_{AB}. (Naito et al., Col. 9, lines 16-28). The dynamic loaded tire radius r_{AB} is determined from a number of pulses (n) provided by a wheel speed sensor 6a-6d associated with the tire of the vehicle. (Naito et al., Col. 9, lines 18-23; and Col. 6, lines 42-51). The variation range discussed in Naito et al. at Col. 8, lines 42-59 is a tolerance range associated with the dynamic loaded tire radius, as Naito et al. recognizes that the tire radius varies subject to changes in the load exerted on the tire and subject to changes in the wear of the tire. The variation disclosed in Naito et al. has no relation to a rate of outputting low frequency initiation signals, as claim 43 recites.

Moreover, the Office Action notes in the paragraph spanning pages 3 and 4 that Naito et al. fails to disclose a vehicle-based unit that outputs low frequency initiation signals. Thus, the variation disclosed in Naito et al. clearly can not be a rate of outputting low frequency initiation signals from the vehicle based-unit, as Naito et al. fails to disclose such initiation signals.

McClelland et al. discloses exciters 16 for providing low frequency signals to drive a tire monitor 12 located in a tire 12 of the vehicle. (McClelland et al., Col. 2,

lines 39-47). McClelland et al., however, fails to teach or suggest varying a rate of the low frequency signals transmitted by the exciters 16 in response to a sensed vehicle condition. Therefore, McClelland et al. also fails to teach or suggest the step of outputting from the vehicle-based unit, at a rate that varies in response to the sensed condition of the vehicle, low frequency initiation signals for reception by the tire condition sensor unit.

Since neither Naito et al. nor McClelland et al. teaches or suggests this step of claim 43, a combination of the references also fails to teach or suggest this step. Therefore, the rejection of claim 43 is improper and should be withdrawn.

2. There is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine reference teachings of Naito et al. and McClelland et al.

As motivation for combining the teachings of McClelland et al. with Naito et al., the Office Action states that "[d]oing so would allow the operator of the vehicle to immediately identify which tire has a problem and take corrective steps in order to avoid regrettable accident that may lead to property damage or severe injury..." (Office Action, page 3). It is respectfully submitted, however, that a combination of Naito et al. and McClelland et al. will not work for the proposed purpose.

Specifically, the Office Action suggests combining the teachings of McClelland et al. with Naito et al. so that a vehicle-based unit of Naito et al. transmits initiation signals to tire-based units, as taught by McClelland et al. The tire condition monitoring system of Naito et al., however, does not include any tire-based units. In Naito et al., the inflation pressure of the tires is calculated, in part, from signals provided by wheel speed sensors 6a-6d mounted on the vehicle. Since Naito et al.

does not includes any tire-based units, there is no reason to modify Naito et al. to include a vehicle-based unit that transmits initiation signals to tire-based units. Therefore, it is respectfully suggested that the rejection of claim 43 as obvious over Naito et al. in view of McClelland et al. is improper and should be withdrawn.

Claims 44, 45, 47, and 48 depend from claim 43 and are allowable for at least the same reasons as claim 43. Therefore, it is respectfully submitted that the rejections of claims 44, 45, 47, and 48 are improper and should be withdrawn.

C. The rejection of Claim 46

Claim 46 depends from claim 43 and is allowable for at least the same reasons as claim 43. Additionally, claim 46 recites that sensing a condition of the vehicle includes sensing vehicle speed. Claim 46 also recites that the method further includes controlling the step of outputting the low frequency signals for reception by the tire condition sensor unit in response to sensed vehicle speed. Neither Naito et al. nor McClelland et al. controls the step of outputting the low frequency signals for reception by the tire condition sensor unit in response to sensed vehicle speed. Therefore, it is respectfully suggested that the rejection of claim 46 is improper and should be withdrawn.

D. The rejection of Claim 49

Claim 49 stands rejected as being obvious under 35 U.S.C. §103 over Naito et al. in view of McClelland et al. It is respectfully submitted that the rejection of claim 49 is improper and should be withdrawn. Claim 49 patentably defines over a combination of Naito et al. and McClelland et al. for reasons similar to those set forth

above with regard to claim 43. Therefore, it is respectfully suggested that the rejection of claim 49 is improper and should be withdrawn.

Claims 50-53 depend from claim 49 and are allowable for at least the same reasons as claim 49. Therefore, it is respectfully submitted that the rejections of claims 50-53 are improper and should be withdrawn.

E. The rejection of Claim 54

Claim 54 depends from claim 49 and is allowable for at least the same reasons as claim 49. Additionally, claim 54 recites that sensing a condition of the vehicle includes sensing vehicle speed. Claim 54 also recites that the method further includes controlling the step of outputting the low frequency signals for reception by the tire condition sensor unit in response to sensed vehicle speed. Neither Naito et al. nor McClelland et al. controls the step of outputting the low frequency signals for reception by the tire condition sensor unit in response to sensed vehicle speed. Therefore, it is respectfully suggested that the rejection of claim 54 is improper and should be withdrawn.

F. Conclusion

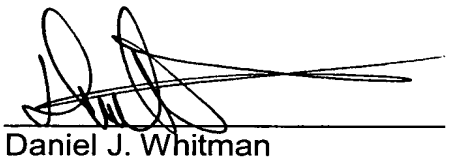
In view of the foregoing, Appellant respectfully submits that the objection of claims 45 and 46 and the rejection of claims 43-54 are improper and should be withdrawn. Reversal of the rejections of claims 43-54 is respectfully requested.

VIII. APPENDICES

The attached Appendix A contains a copy of the claims on appeal. There is no additional evidence to be submitted. Therefore, an evidence appendix has been omitted.

Please charge any deficiency or credit any overpayment in the fees for this Appeal Brief to Deposit Account No. 20-0090.

Respectfully submitted,



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Appendix A

Claim 15. A tire condition communication system for a vehicle, said system comprising:

sensor means, associated with a tire, for sensing at least one tire condition;

radio frequency transmitter means, associated with the tire and operatively connected to said sensor means, for transmitting a radio frequency signal that indicates the sensed tire condition; and

communication means, having a first portion associated with the tire and operatively connected to said radio frequency transmitter means and a second portion associated with the vehicle, for communicating requests from the vehicle to said first portion of said communication means, each request causing said radio frequency transmitter means to transmit the radio frequency signal that indicates the sensed tire condition,

said second portion of said communication means being operatively connected to a vehicle condition sensor that is adapted to sense a condition of the vehicle, said second portion of said communication means communicating requests from the vehicle at a rate that varies in response to the sensed condition of the vehicle.

Claim 16. A tire condition communication system as set forth in claim 15, wherein the requests are low frequency initiation signals and wherein said first portion of said communication means includes low frequency receiver means for receiving a low frequency initiation signal and for causing said radio frequency transmitter means to transmit the radio frequency signal in response to receipt of the low frequency initiation signal.

Claim 17. A tire condition communication system as set forth in claim 16, wherein said communication means includes first and second magnetic induction antennas.

Claim 18. A tire condition communication system as set forth in claim 15, including radio frequency receiver means, associated with the vehicle, for receiving the radio frequency signal that indicates the sensed tire condition.

Claim 19. A tire condition communication system as set forth in claim 18, wherein said sensor means senses tire inflation pressure as the sensed tire condition.

Claim 20. A tire condition communication system as set forth in claim 18, including indicator means for providing an indication of sensed tire condition.

Claim 21. A tire condition communication system as set forth in claim 20, wherein said indicator means is also for indicating tire location.

Claim 22. A tire condition communication system as set forth in claim 20, wherein said radio frequency transmitter means is also for transmitting an identification associated with the tire, said system including means for using the identification to determine tire location, and said indicator means also ~~for~~ indicating tire location.

Claim 23. A tire condition communication system as set forth in claim 22, including means for storing identifications and associating identifications with respective tire locations.

Claim 24. A tire condition communication system as set forth in claim 23, including means for updating the stored identifications.

Claim 25. A tire condition communication system as set forth in claim 24, wherein said means for updating the stored identifications includes means for monitoring the number of times an identification is received at said second portion of said communication means.

Claim 26. A tire condition communication system as set forth in claim 15, said vehicle condition sensor sensing a speed of the vehicle and said second portion of said communication means utilizing vehicle speed to vary the rate that the requests are communicated.

Claim 27. A tire condition communication system as set forth in claim 15, including memory means, associated with the tire, for holding a fixed identification associated with the tire, said radio frequency transmitter means also for transmitting the radio frequency signal to indicate the fixed identification.

Claim 28. A tire condition communication system as set forth in claim 27, including memory means, associated with the vehicle, for holding identification values for comparison with the fixed identification indicated by the received radio frequency signal.

Claim 29. A tire condition communication system as set forth in claim 27, wherein said memory means is capable of learning new identifications.

Claim 30. A tire condition communication system as set forth in claim 27, wherein said communication means does not convey identification information.

Claim 32. A tire condition communication system as set forth in claim 27, wherein the requests are low frequency initiation signals and wherein said first portion of said communication means includes low frequency receiver means for receiving a low frequency initiation signal and for causing said radio frequency transmitter means to transmit the radio frequency signal in response to receipt of the low frequency initiation signal.

Claim 33. A tire condition communication system as set forth in claim 32, wherein said communication means includes first and second magnetic induction antennas.

Claim 34. A tire condition communication system as set forth in claim 27, including radio frequency receiver means, associated with the vehicle, for receiving the radio frequency signal that indicates the fixed identification and the sensed tire condition, and memory means, associated with the vehicle, for holding identification values for comparison with the fixed identification indicated by the received radio frequency signal.

Claim 35. A tire condition communication system as set forth in claim 27, wherein said memory means is capable of learning new identifications.

Claim 36. A tire condition communication system as set forth in claim 27, including means for counting the number of receptions of an identification to determine whether to learn a new identification.

Claim 37. A tire condition communication system as set forth in claim 27, wherein said communication means does not convey identification information.

Claim 38. A tire condition communication system as set forth in claim 27, wherein said sensor means senses tire inflation pressure as the sensed tire condition.

Claim 39. A tire condition communication system as set forth in claim 27, including indicator means for providing an indication of sensed tire condition.

Claim 40. A tire condition communication system as set forth in claim 39, wherein said indicator means is also for providing an indication of tire location with the indication of sensed tire condition.

Claim 42. A tire condition communication system as set forth in claim 27, wherein said vehicle condition sensor senses a speed of the vehicle and the vehicle condition is vehicle speed.

Claim 43. A method of communicating tire condition information from a tire condition sensor unit to a vehicle-based unit of a tire communication system of a vehicle, said method comprising:

sensing a condition of the vehicle;

outputting from the vehicle based-unit, at a rate that varies in response to the sensed condition of the vehicle, low frequency initiation signals for reception by the tire condition sensor unit; and

outputting, in response to receipt of a low frequency initiation signal, a radio frequency response signal that conveys the tire condition information from the tire condition sensor unit for reception by the vehicle-based unit.

Claim 44. A method as set forth in claim 43 including conveying in the radio frequency response signal a fixed tire identification.

Claim 45. A method as set forth in claim 43, including indicating the sensed condition and tire location to a vehicle operator.

Claim 46. A method as set forth in claim 43, wherein sensing a condition of the vehicle includes sensing vehicle speed and further including controlling the step of outputting the low frequency signals for reception by the tire condition sensor unit in response to sensed vehicle speed.

Claim 47. A method as set forth in claim 44, including comparing the conveyed tire identification with a stored identification at the vehicle.

Claim 48. A method as set forth in claim 47, including updating the stored identification at the vehicle via provision of a new identification from a tire condition sensor unit.

Claim 49. A method of communicating tire condition information from a plurality of tire condition sensor units to a vehicle-based unit of a tire communication system of a vehicle, said method comprising:

sensing a condition of the vehicle;

sequentially outputting from the vehicle based-unit, at a rate that varies in response to the sensed condition of the vehicle, low frequency initiation signals, each low frequency initiation signal being for reception by one of the plurality of tire condition sensor units; and

each tire condition sensor unit outputting, in response to receipt of a respective low frequency initiation signal, a radio frequency response signal that conveys the tire condition information from that tire condition sensor unit for reception by the vehicle-based unit.

Claim 50. A method as set forth in claim 49, wherein said step of outputting the radio frequency response signal includes outputting the response signal to convey a fixed tire identification.

Claim 51. A method as set forth in claim 50, including indicating the sensed conditions and tire locations to a vehicle operator.

Claim 52. A method as set forth in claim 50, including comparing the conveyed tire identification with stored identifications at the vehicle.

Claim 53. A method as set forth in claim 49, including updating a stored identification at the vehicle via provision of a new identification from a tire condition sensor unit.

Claim 54. A method as set forth in claim 49, wherein sensing a condition of the vehicle includes sensing vehicle speed and further including controlling the step of outputting the low frequency signals for reception by the tire condition sensor units in response to the sensed vehicle speed.

Claim 57. A tire condition communication system for a vehicle, said system comprising:

a tire based unit including sensor means for sensing a tire condition, radio frequency transmitter means, operatively connected to said sensor means, for transmitting a radio frequency signal that indicates the sensed tire condition, and low frequency receiver means, operatively connected to said radio frequency transmitter means, for receiving a low frequency initiation signal and for causing said radio frequency transmitter means to transmit the radio frequency signal indicative of the sensed tire condition in response to receipt of the low frequency initiation signal; and

a vehicle based unit including a vehicle condition sensor for sensing a condition of the vehicle, low frequency transmitter mean for transmitting low frequency initiation signals, and radio frequency receiver means for receiving the radio frequency signal indicative of the sensed tire condition from said tire based unit,

said low frequency transmitter means of said vehicle based unit transmitting the low frequency initiation signals to said tire based unit at a rate that varies in response to the sensed condition of the vehicle.

Claim 58. A tire condition communication system as set forth in claim 57, wherein the vehicle condition sensor is a vehicle speed sensor for sensing the speed of the vehicle, said low frequency transmitter means of said vehicle based unit transmitting the low frequency initiation signals to said tire based unit at a rate that varies in response to the sensed vehicle speed.

Claim 59. A tire condition communication system as set forth in claim 57, wherein said low frequency receiver means and said low frequency transmitter means include first and second magnetic induction antennas, respectively.

Claim 60. A tire condition communication system as set forth in claim 57, wherein said tire based unit also includes a memory in which an identification of said tire based unit is stored, said radio frequency transmitter means including the identification of said tire based unit in the radio frequency signal.

Claim 61. A tire condition communication system as set forth in claim 60, wherein said vehicle-based unit includes means for storing the identification of said tire based unit after receiving the identification in the radio frequency signal.

Claim 62. A tire condition communication system as set forth in claim 61, wherein said vehicle based unit includes means for pairing the stored identification with a tire location.

Claim 63. A tire condition communication system as set forth in claim 57, wherein said tire based unit further includes controller means operatively connected to said sensor means, said radio frequency transmitter means, and said low frequency receiver means and controlling operation of said sensor means and said radio frequency transmitter means.

Claim 64. A tire condition communication system as set forth in claim 57, wherein said sensor means senses tire inflation pressure as the sensed tire condition.